CLAIMS

1. Method for analyzing at least one deformable object (O) in a suspension fluid, comprising the steps:

   - generation of an electric positioning field and positioning of the object (O) in a potential minimum of the positioning field,

   - generation of an electric deformation field in such a way that a deformation force is exerted on the object (O), and

   - detection of at least one property selected from the group comprising the dielectric, geometric and optical properties of the object (O),

   characterized in that

   - the positioning field is generated in a compartment (12) of a fluidic microsystem (10), and

   - the positioning of the object (O) takes place in a contactless manner without electrode contact or in a freely suspended state.

2. Method according to claim 1, in which the positioning of the object (O) takes place under the effect of negative dielectrophoresis or under the effect of positive dielectrophoresis.

3. Method according to claim 1 or 2, in which the generation of the deformation force takes place under the effect of negative dielectrophoresis or under the effect of positive dielectrophoresis.

4. Method according to claim 1, 2 or 3, in which the detection takes place during or after the deformation of the object (O) and accordingly comprises a determination of deformation or relaxation properties of the object (O).

5. Method according to at least one of claims 1 to 4, in which the positioning field is generated as a high-frequency field cage by means of a cage electrode arrangement (1-4, 1'-4').

6. Method according to claim 5, in which the high-frequency field cage is operated as a closed field cage with a punctiform potential minimum, in which the object (O) rests.

7. Method according to claim 5, in which the high-frequency field cage is operated as an open field cage with a linear potential minimum, through which the object (O) moves with the suspension fluid.

8. Method according to any of claims 5 to 7, in which the cage electrode arrangement (1-4, 1'-4') is used to generate the deformation field.

9. Method according to any of claims 5 to 7, in which a separate deformation electrode arrangement (5, 6) is used to generate the deformation field.

10. Method according to at least one of the preceding claims, in which the deformation field is set for a duration of 1 ms to 500 ms.

11. Method according to at least one of the preceding claims, in which the generation of the deformation field takes place in a pulsed manner.

12. Method according to at least one of the preceding claims, in which the object (O) is exposed to a treatment fluid before or during the generation of the deformation field.

13. Method according to at least one of the preceding claims, comprising a multiple measurement in which the steps of generation of the deformation field with the detection and the generation of the positioning field are carried out in an alternating manner a number of times one after the other.

14. Method according to claim 13, in which the multiple measurement is carried out for the duration of at least one second.

15. Method according to claim 13 or 14, in which the positioning field and/or the deformation field is adjusted or changed as a function of the result of the respectively preceding detection.

16. Method according to at least one of claims 13 to 15, in which the deformation field and/or the positioning field is adjusted a number of times in such a way that the object (O) is in each case deformed in different directions.

17. Method according to at least one of the preceding claims, in which viscoelastic properties of the object (O) are determined from the detected dielectric, geometric and/or optical properties.

18. Method according to at least one of the preceding claims, in which, prior to the positioning step, the object (O) is selected from a sample which has been subjected to a dielectric lining-up operation.

19. Method according to at least one of the preceding claims, in which the object (O) comprises at least one biological cell, cell group, cell constituent or synthetic particle.

20. Method according to claim 19, in which a distinction is made between normal and altered cells or between normal cells having different physiological properties as a function of the detected dielectric, geometric and/or optical properties.

21. Method according to claim 19, in which stem cells are identified as a function of the detected dielectric, geometric and/or optical properties.

22. Method according to claim 19, 20 or 21, in which the dielectric, geometric and/or optical properties of the cell are detected as a function of at least one of the following parameters:

- frequency of the positioning field,
- frequency of the deformation field,
- voltage of the positioning field,
- voltage of the deformation field,
- temperature of the suspension or treatment fluids,
- material composition of the suspension or treatment fluids,

- duration of the individual deformation, and

- duration of a number of deformations.

23. Method according to at least one of claims 19 to 22, in which a measurement of cell pairs or cell aggregates and/or a separation of cell pairs takes place.

24. Method according to claim 22, in which the cell pairs or cell aggregates are brought together in the positioning field.

25. Measuring apparatus for analyzing at least one object, which comprises:

- a fluidic microsystem (10) which has a compartment (12) containing at least one electrode arrangement (1-4, 1'-4'),

- a detector device (20), which is designed for the electric, geometric and/or optical measurement of object properties, and

- a field forming device (30) comprising at least one high-frequency generator (31),

characterized in that

- the field forming device (30) can be switched between an operating state in which a high-frequency positioning field is generated in the compartment (12) by means of the at least one electrode arrangement (1-4, 1'-4') and an operating state in which a deformation field is generated in the analysis area (11) by means of the at least one electrode arrangement.

26. Measuring apparatus according to claim 25, in which the field forming device (30) contains a switching device (32) which can be used for switching between the operating states.

27. Measuring apparatus according to claim 25 or 26, in which the detector device (20) includes a microscope (21) with a camera (22).

28. Measuring apparatus according to at least one of the preceding claims 25 to 27, in which the fluidic microsystem (10) is equipped with a fluidic device (40) for moving a suspension fluid and/or a treatment fluid through the analysis area (11).

29. Measuring apparatus according to at least one of the preceding claims 25 to 28, in which a control device (50) is provided which is connected to the detector device (20) and the switching device (32).

30. Measuring apparatus according to claim 29, in which the control device (50) forms a control loop in which the positioning field and/or the deformation field can be adjusted or changed as a function of the result of the preceding detection.

31. Measuring apparatus according to at least one of the preceding claims 25 to 30, in which the electrode arrangement comprises electrodes with electrode tips, wherein the electrode tips of neighbouring electrodes have boundaries which run parallel at least in some sections.

32. Measuring apparatus according to claim 31, in which the boundaries which run parallel are oriented parallel or perpendicular to a longitudinal direction of the compartment of the fluidic microsystem.

33. Measuring apparatus according to at least one of the preceding claims 25 to 32, in which the positioning field and the deformation field are switched on at the same time in the second operating state.

34. Use of a fluidic microsystem with a high-frequency field cage for analyzing deformation and/or relaxation properties of biological cells.